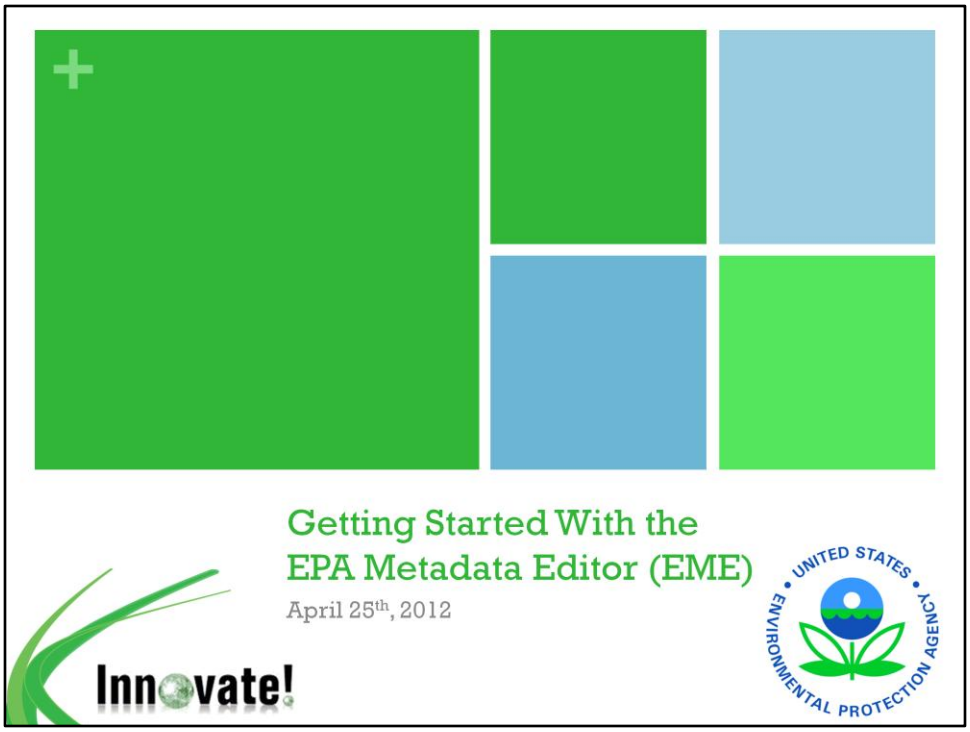
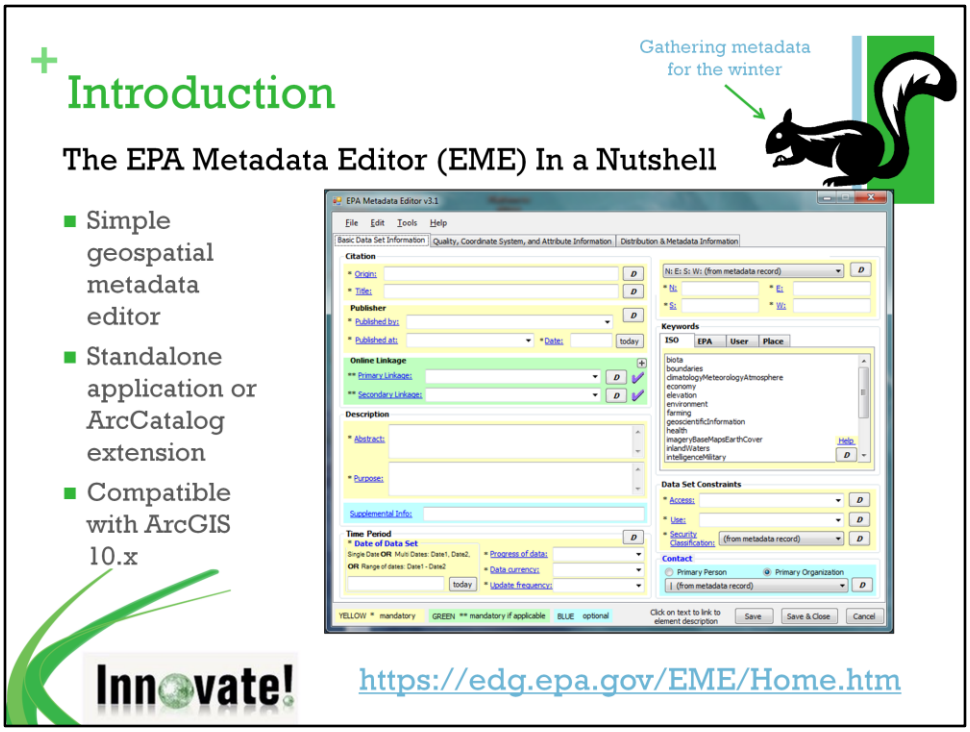


Thank-you, Dave, and welcome, everyone. Like Dave said, I'm with Innovate's geospatial solutions group. I work with Jessica Zichichi, who I'm sure many of you know. I'm based out of Tallahassee, Florida, and I'm pleased to virtually meet all of you.

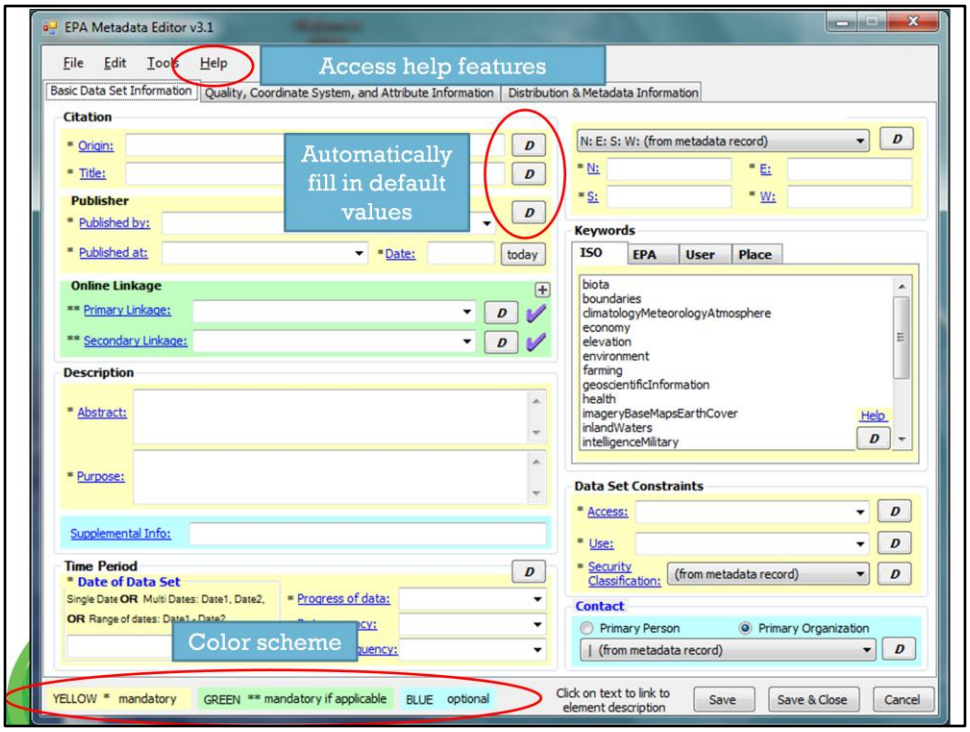
Today is the first in a series of EME training sessions that will take place between now and September. In this first session we'll cover the EME basics. Catherine and I will go over installation, introduce you to the EME's main features – including setting up the EME database and configuring synchronization and validation – and guide you through a suggested workflow. We'll give you a taste of what to expect in the next release of EME, show you where to find additional information, and answer as many of your questions as possible.

When I first started using the EME, I had a lot of experience with GIS but very little experience creating metadata. I know that the intricacies of creating and editing metadata aren't necessarily obvious just because you're a "GIS person." So this will be an introductory presentation, but hopefully it will also include useful information for our more experienced users.



The EME is a simple geospatial metadata editor that allows users to create and edit records that meet the EPA Geospatial Metadata Technical Specification and Federal Geographic Data Committee Content Standard for Digital Geospatial Metadata requirements. The FGDC CSDGM, besides being a mouthful, is the current US Federal metadata standard. By using the EME, you can ensure that your records will meet these very detailed standards and save yourself some time and effort in the process.

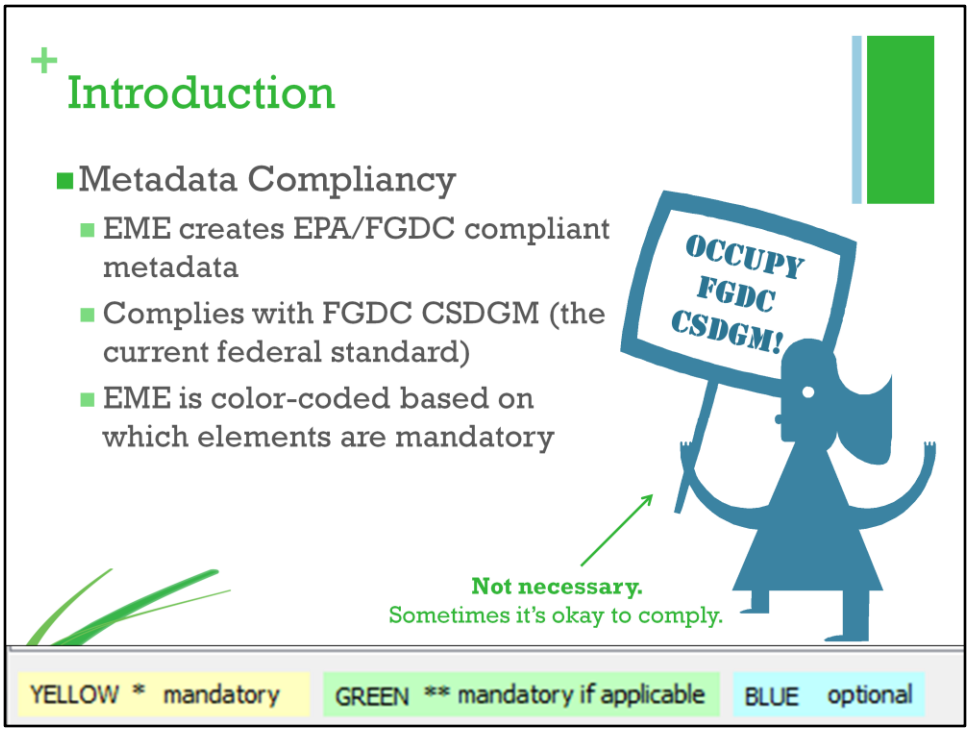
The EME comes with basic EPA defaults and an EPA metadata validation service. You can customize it to meet your needs, but right off the bat a lot of the work is already done for you. EME works as either a standalone application or as an ArcCatalog extension. EME is compatible with ArcGIS 10, but it lets you maintain the same metadata workflows that you used with ArcGIS 9.x. This is helpful because metadata is handled quite differently in ArcGIS 10 than it was in previous versions of ArcGIS. If you've got an established metadata process that worked for you in 9.x, then the EME allows you to keep following your metadata workflow even after upgrading to 10.



Here is the EME user interface. This is what you'll see when you open the program, either from ArcCatalog or as a standalone application. Each of these blank text boxes represents a metadata element. You'll notice that there are three tabs, each of which contains a set of metadata elements. The Help menu at the top is useful. EME comes with some very detailed Help documentation, so bear in mind that the Help is accessible from the user interface.

I want to point out these "D" buttons because they're one of the EME's most important features. By clicking the D button, the corresponding field is automatically populated with Default information. You can customize the Defaults to meet your needs – and we'll be going over how to do that. So for example, if you have a group of metadata records that all share the same Publisher information, you can set that information as the Default and only fill it in once.

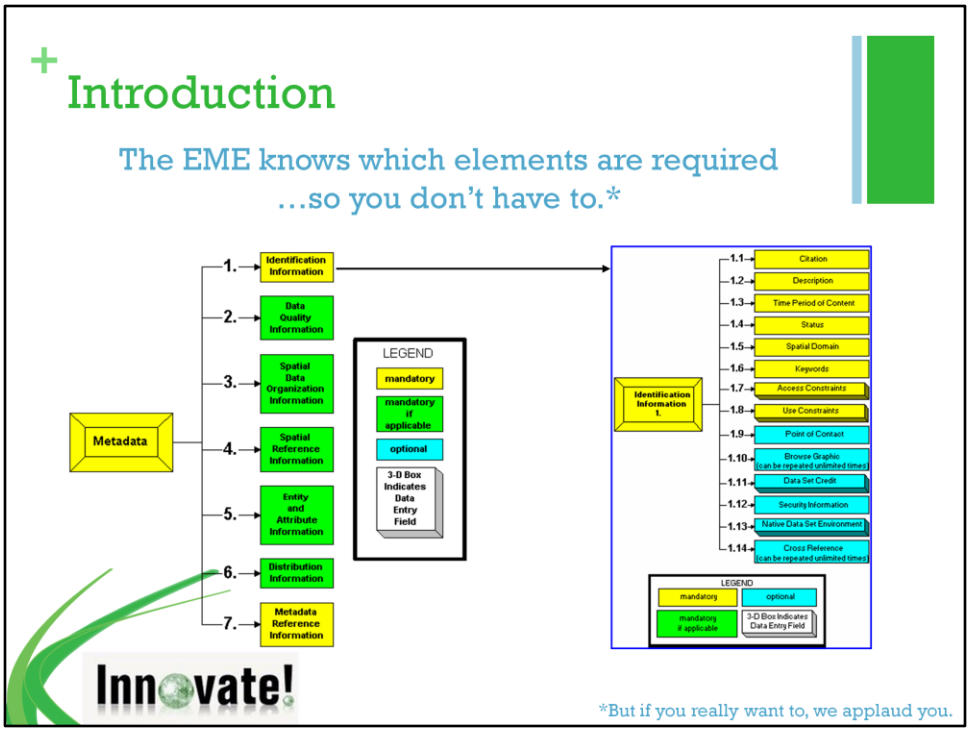
This color scheme key is also noteworthy. It distinguishes among fields that are mandatory, mandatory if applicable, and optional. By completing all of the mandatory and mandatory-if-applicable fields, you can be sure that your record will be compliant with EPA and FGDC standards.



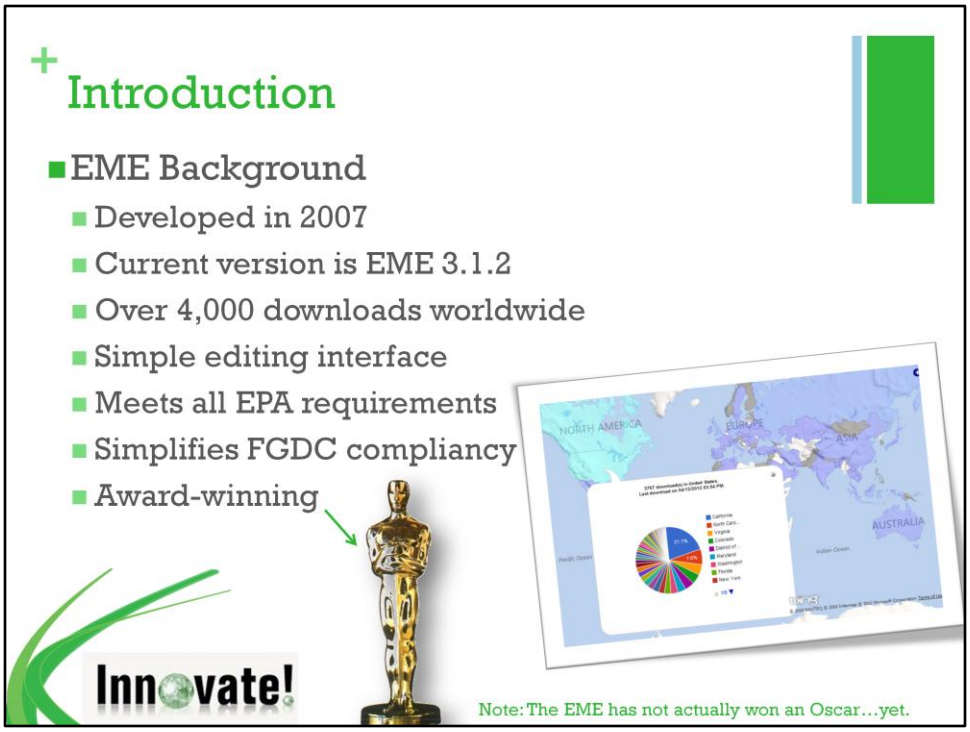
Let's spend a minute talking about metadata compliancy and why it matters.

FGDC has established some basic requirements for metadata; these constitute a record's compliancy. The rules are carried out by classifying sections as mandatory, mandatory if applicable and optional. This can become tricky with compound elements in a record – some of them have nested requirements, which can be confusing. Additionally, the information must be documented using the correct format for some data elements. There are not a lot of data format and content requirements in the FGDC CSDGM. Many fields are free text, but there are some requirements for fields that are supposed to contain particular types of information, such as numbers or dates.

The EME color coding makes it simple to sort through these requirements painlessly.



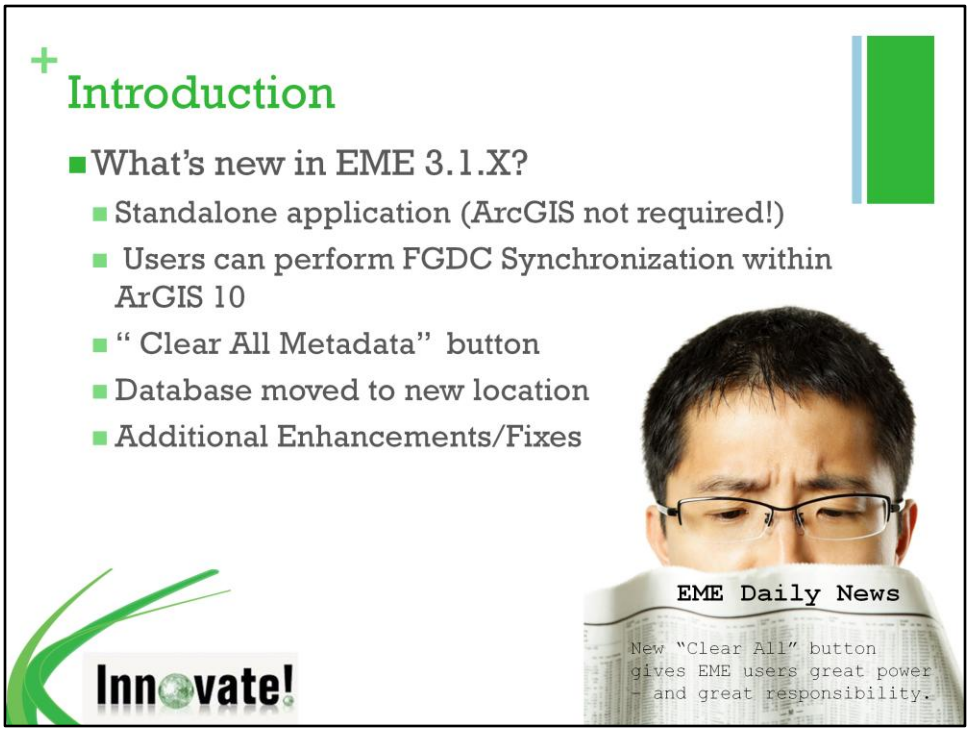
This is a diagram that I don't like to look at it, so we won't spend much time on it. It's a representation of which FGDC CSDGM elements are required and which are not. The EME tries to strike a balance between being complete and keeping the user interface simple, so it doesn't include all FGDC fields. We're going to include some additional fields in the next version of EME based on user feedback, but it's always a bit of a balancing act between simplicity and inclusiveness.



Creating metadata has been a challenge for agencies across the US for many years, often due to lack of tools that provide a simple editing interface that meets all requirements. To address this challenge, the EPA developed the EME about five years ago. Since then it has been downloaded over 4,000 times by users across the globe. It was one of the first FGDC metadata editors to be compatible with ArcGIS 10.

Its streamlined design, integrated help system, and use of defaults and drop-downs simplify the process of creating metadata that meets FGDC requirements. The current release of EME provides users with an FGDC metadata editor that is compatible with ArcGIS 10 and runs as a standalone tool. Additionally, EME for ArcGIS is deployed with a customizable synchronizer and EPA Validation tool.

The EME has won a couple of prizes, including awards at the ESRI applications fair and an award from Government Computer News.



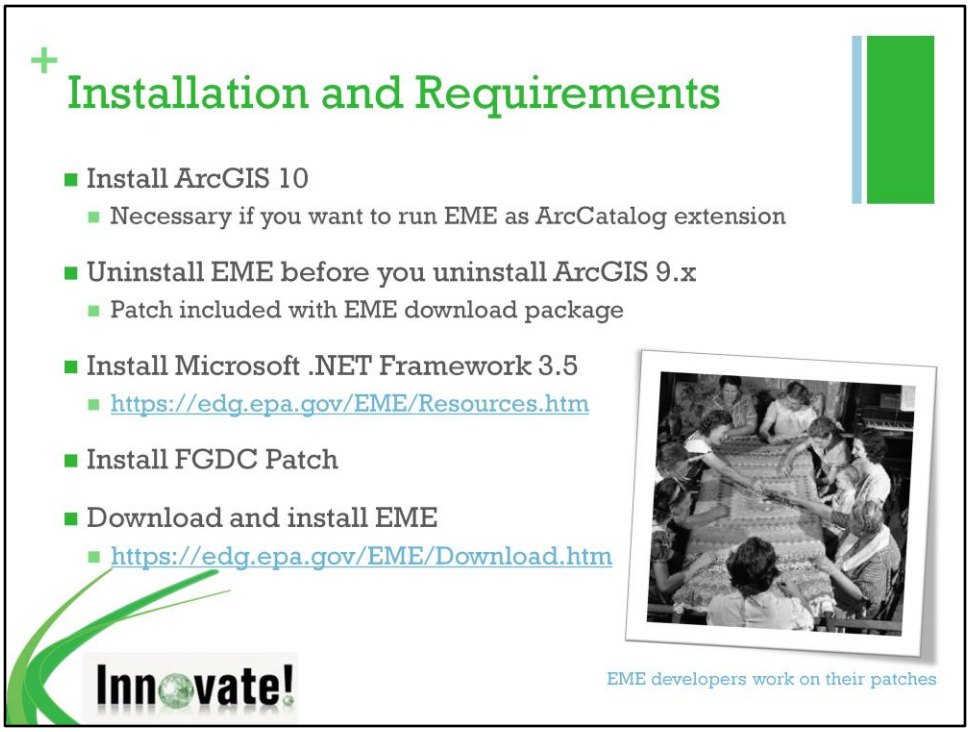
The latest release of EME includes a few updates and improvements:

In previous releases, EME could only be used within ArcCatalog. Now it can be used on its own.
EME now provides users with the ability to synchronize FGDC metadata within ArcGIS version 10, which can otherwise be tricky because of the ways metadata has been re-worked in ArcGIS 10
Provides users with the ability to include more than two online linkages in their metadata
Provides users with a 'Clear All Metadata' button to remove all content from their record
The installation location of the EME database has been moved to a location that is not typically write-protected (for individuals that may have managed desktop environments)

The latest release also includes several bug fixes.

[EME version also provides the following bug fixes:

FGDC CSDGM section 6 is no longer accidentally erased from user's metadata record in special cases
XML header information is no longer removed from user's metadata record
Processing contribution information is no longer removed from user's metadata record
Detailed attribute information is no longer erased when using the EPA synchronizer
Installing and using EME under different user accounts no longer generates an error when EME looks for the last_session.xml file.
Introduces new fields?]



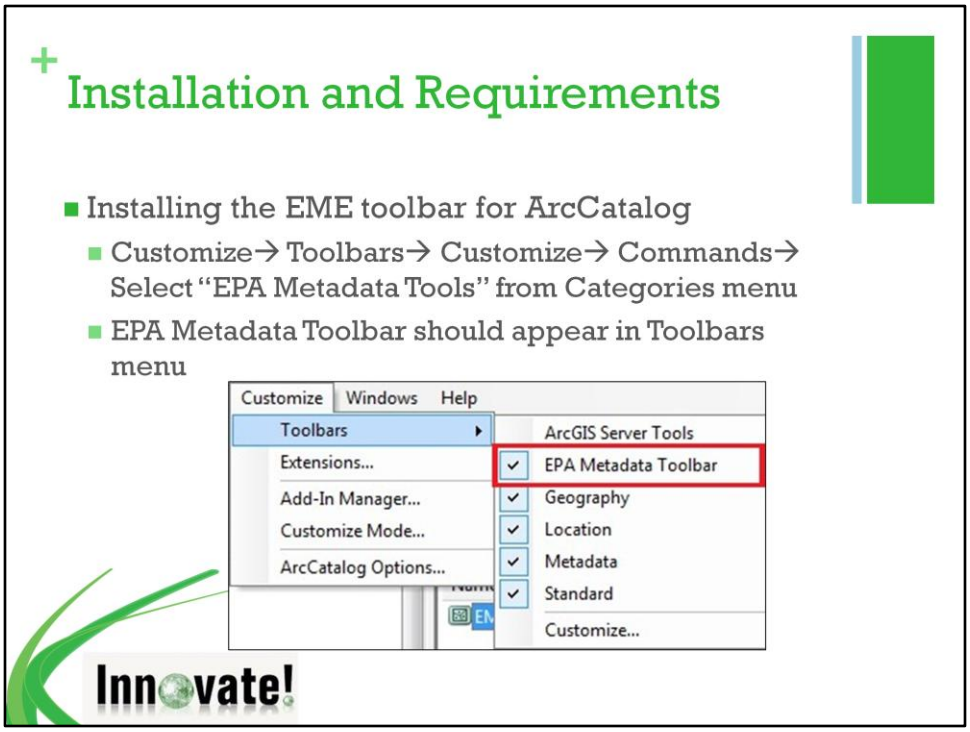
If you haven't installed EME yet, but you want to, there are a few things to consider.

First, you will need to be running ArcGIS 10 if you want to run EME as an ArcCatalog extension.

Second, if you are upgrading from ArcGIS 9.x to 10, you will need to uninstall your old copy of EME **before** you uninstall ArcGIS 9.x. If you do not uninstall EME prior to uninstalling ArcGIS 9.X, you will receive an error when uninstalling EME ('Unable to get installer types...'). This error is generated by reliance upon ESRI assemblies. EPA has developed a patch to assist users with this issue. The patch is included in current EME download package. The patch is installed separately from EME v3.1.1.

Third, you will need to install Microsoft .NET Framework 3.5 in order to run the EME. Microsoft's .NET Framework 3.5 is freely available and can be accessed from Microsoft's website. You can determine if the .NET Framework is on your machine by going to Start->Control Panel->Add or Remove Programs. You should see Microsoft .NET Framework 3.5 listed. Multiple versions of Microsoft .Net Framework (e.g., 1,2,3) may exist on your machine simultaneously.

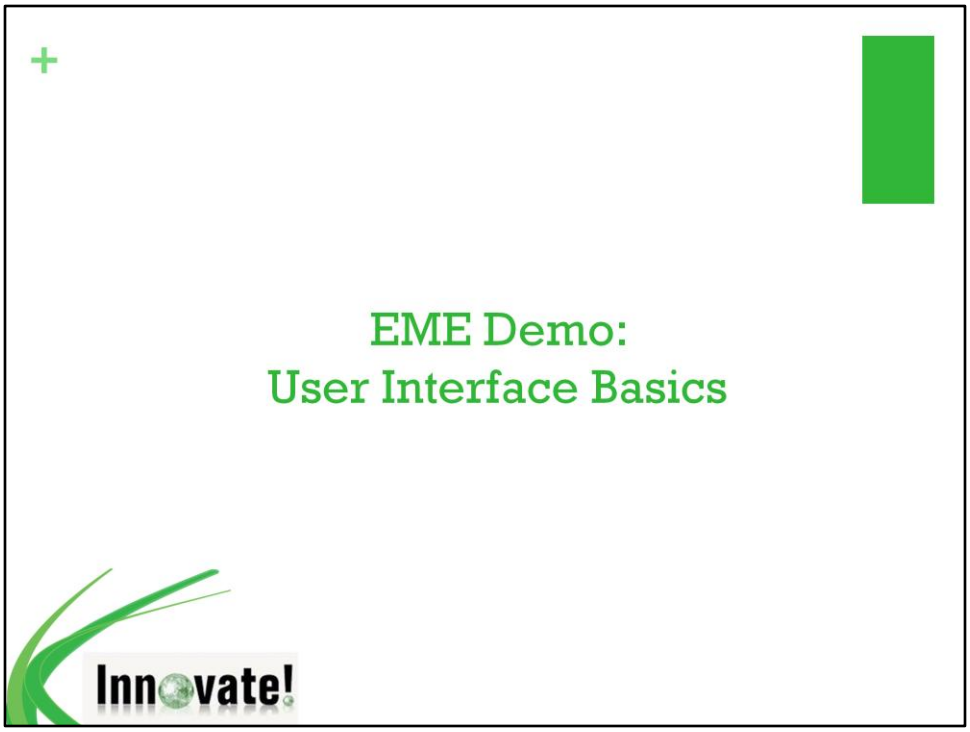
Fourth, you will need to download and install the FGDC Patch for ArcGIS must be installed on your machine. The FGDC Patch for ArcGIS is free. The patch allows you to export ArcGIS metadata to the FGDC format, validate FGDC metadata, and edit metadata using a specific FGDC configuration based on the new editor introduced in 10.0.



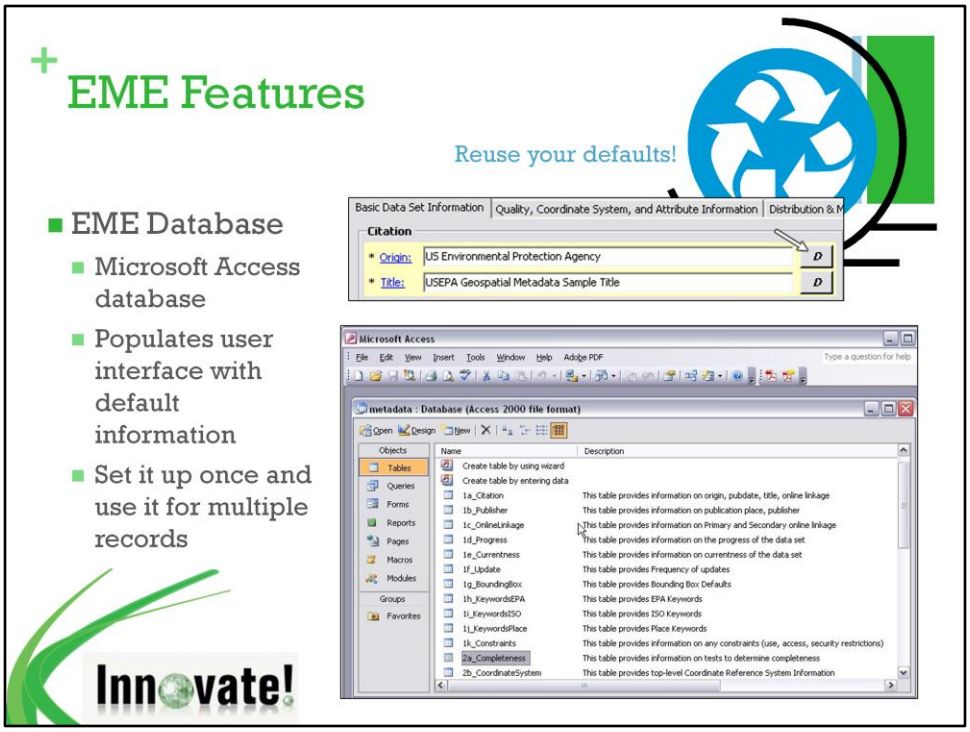
Once you have downloaded and installed the EME, you will need to open up ArcCatalog and install the EME toolbar. From ArcCatalog, you'll go to

Customize→ Toolbars→ Customize→ Commands→ Select "EPA Metadata Tools" from Categories menu.

After you've completed those steps, the EPA Metadata Toolbar should appear in Toolbars menu.

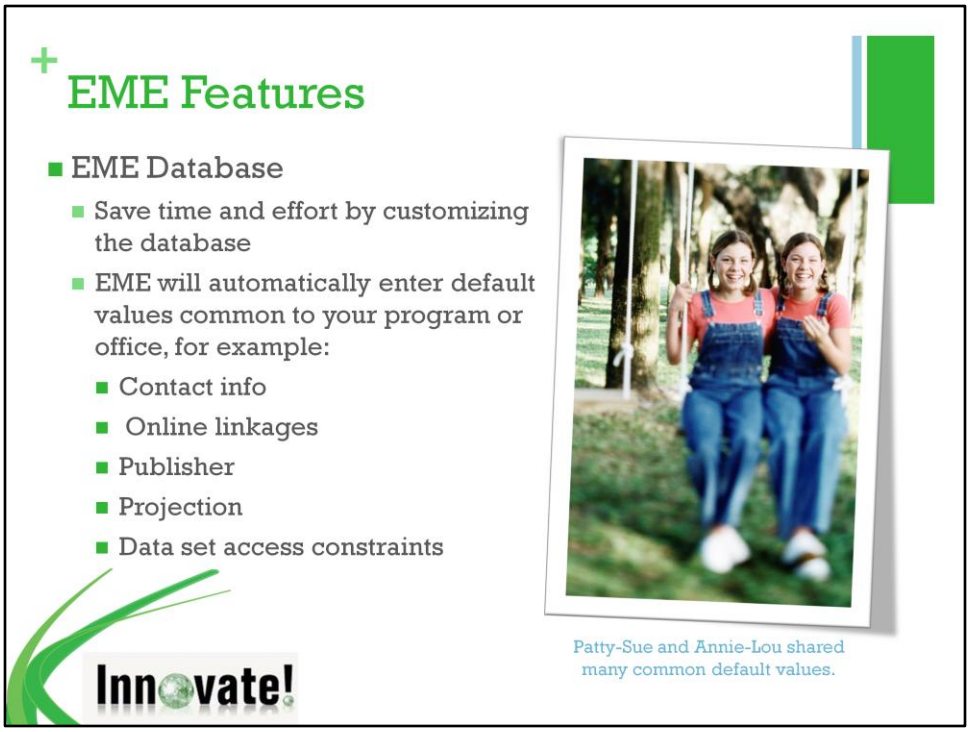


Now I'm going to turn the presentation over to Catherine, who will give you a demonstration of the EME User Interface Basics. Catherine, I'll stop sharing my screen now and you can take control.

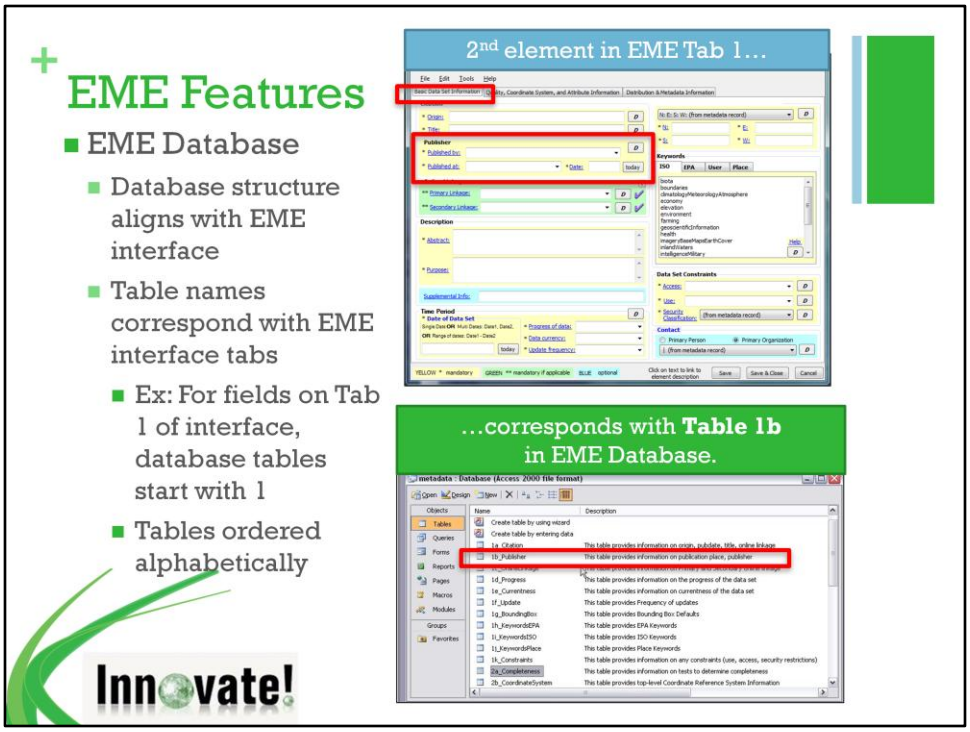


Thanks, Catherine. Now we're going discuss a few of the EME's important features. We'll start with the EME Database.

The EME uses a Microsoft Access database to supply default information within the user interface. Information stored in this database can be modified by the user to include new data or to change defaults that are used by the 'Set Default' buttons. Making these changes requires that the user have Microsoft Access installed locally on their machine.

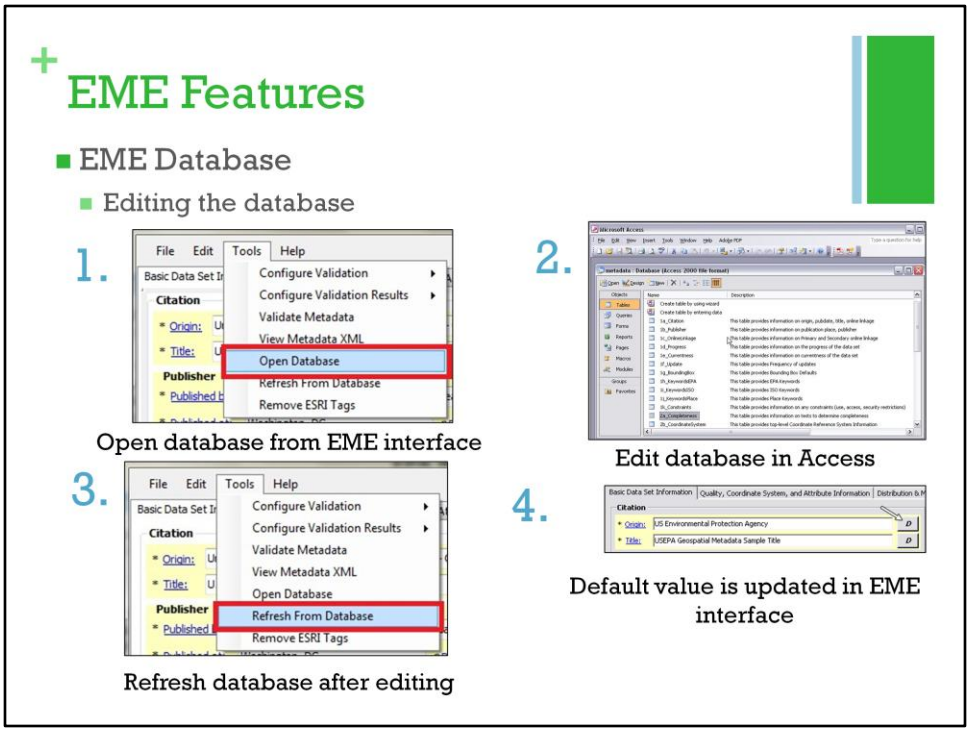


Like I mentioned earlier, you can customize the EME Database to automatically enter default values into the EME. This can save you a lot of time, especially if you are creating a lot of metadata records. Some of the fields that you can be automatically populated include contact information, online links, publisher information, projection, and data set access constraints.



The database is structured to align closely with the flow of the user interface. All tables in the database are named according to the location in which their information resides in the EME user interface. For example, all tables that have information located on tab 1 of the user interface begin with a 1. All tables that store information located on tab 2 of the user interface begin with a 2. All tables that store information located on tab 3 of the database begin with a 3. The tables are also ordered sequentially by letter. When sorted by name, the tables generally flow with the order of the elements as they are located in the user interface, starting with the top left.

Each table has a column in it called 'default'. This column controls what is selected in the EME when the user clicks on the 'Set Default' or 'D' buttons. Users may change the defaults used by the EME by selecting the checkbox next to the entry of their choice. Note that you will need to uncheck the currently selected default when selecting a new default.



Editing the Database

To modify the EME database, take the following steps:

1. Navigate to Tools --> Open Database.
2. Locate and open a table of interest (e.g., "1b_Publisher").

Change the default by selecting a new default entry and deselecting the existing default entry.

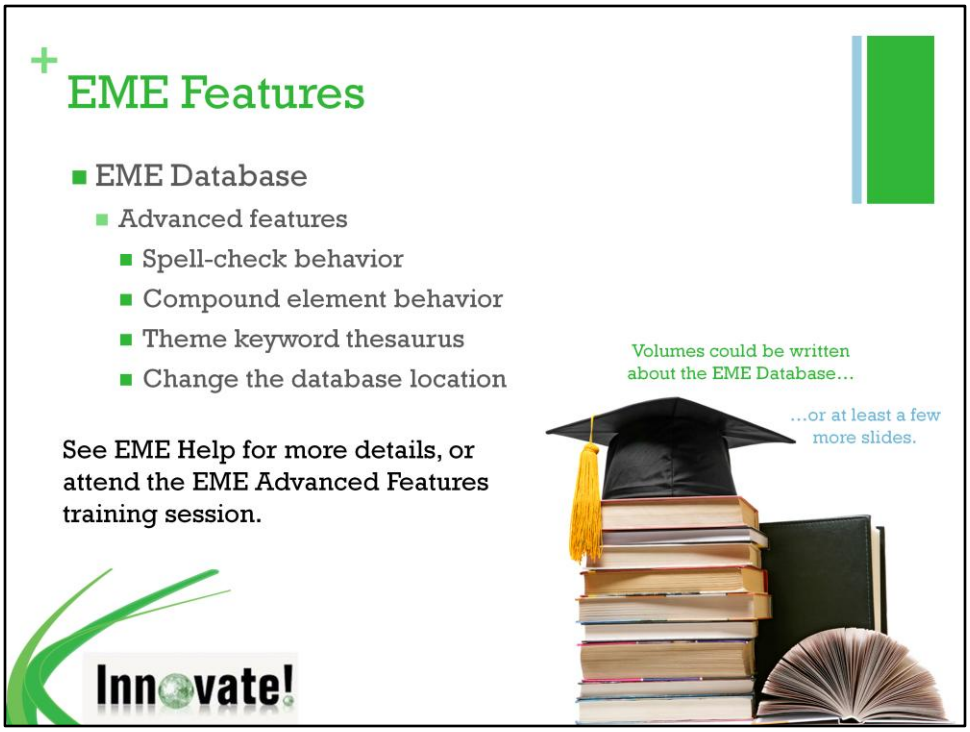
Add new information by adding a new row to the table and entering your own data.

If you don't want anything to be selected as default for a particular field, deselect all checkboxes in the user interface.

Close the database.

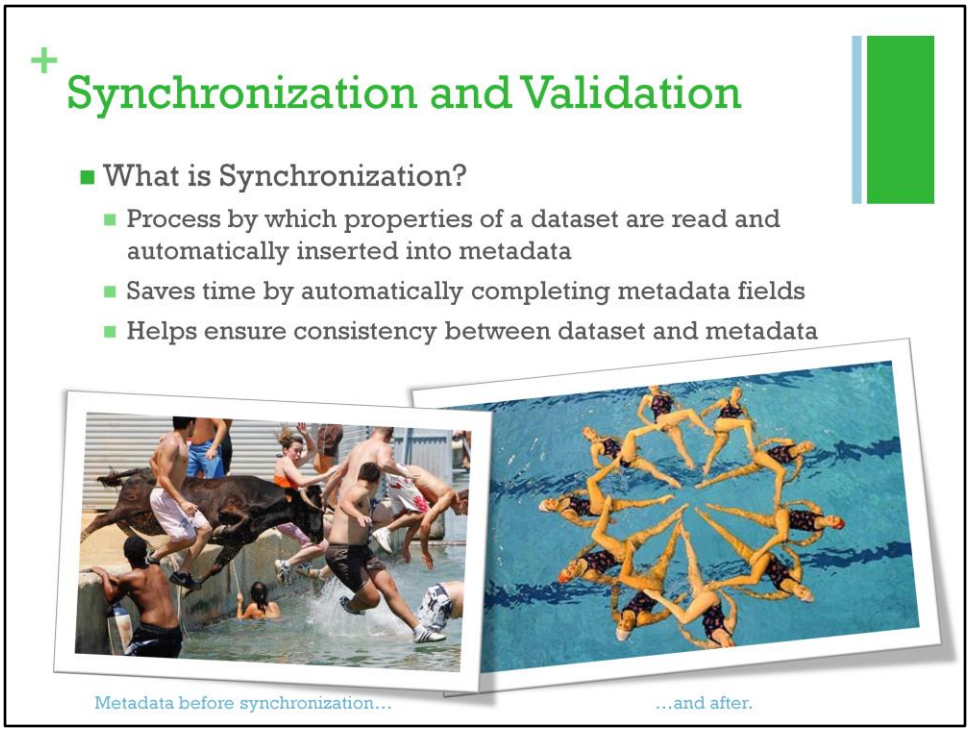
3. Click on the 'Refresh DB' button in the EME interface to update the user interface.

You will need to click this button for each tab where changes should be reflected.



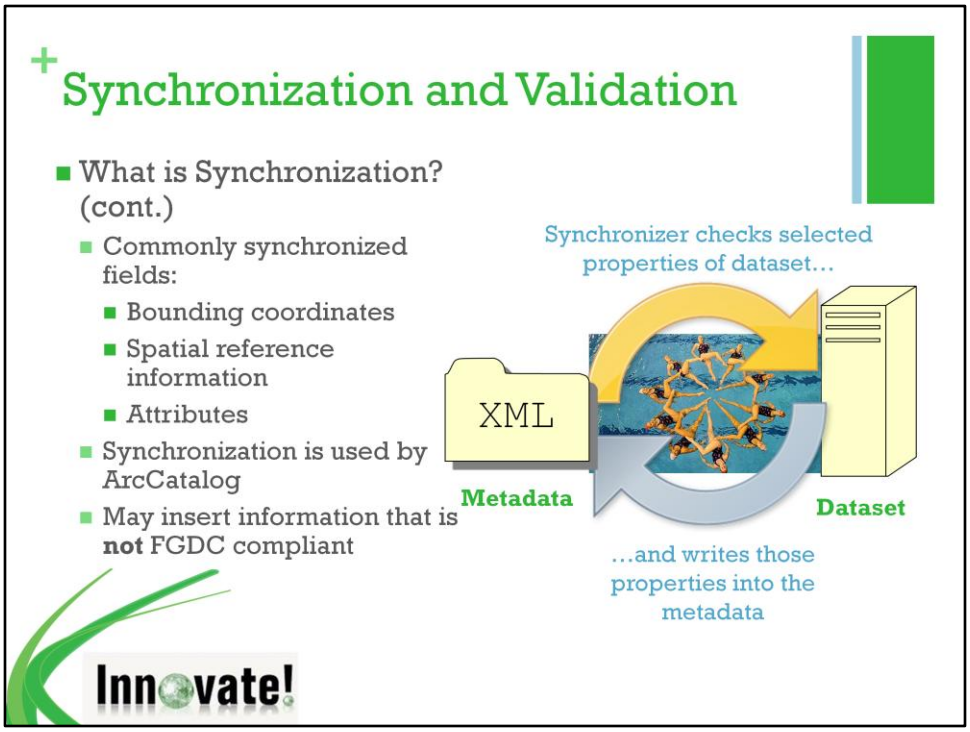
The database also has some advanced features, including spell-check behavior, compound element behavior, a theme keyword thesaurus, and the ability to change the database location. We will cover those topics in the next training session. You can also check the EME Help for more details.

For now though, we're going to move on to two other EME features: synchronization and validation.



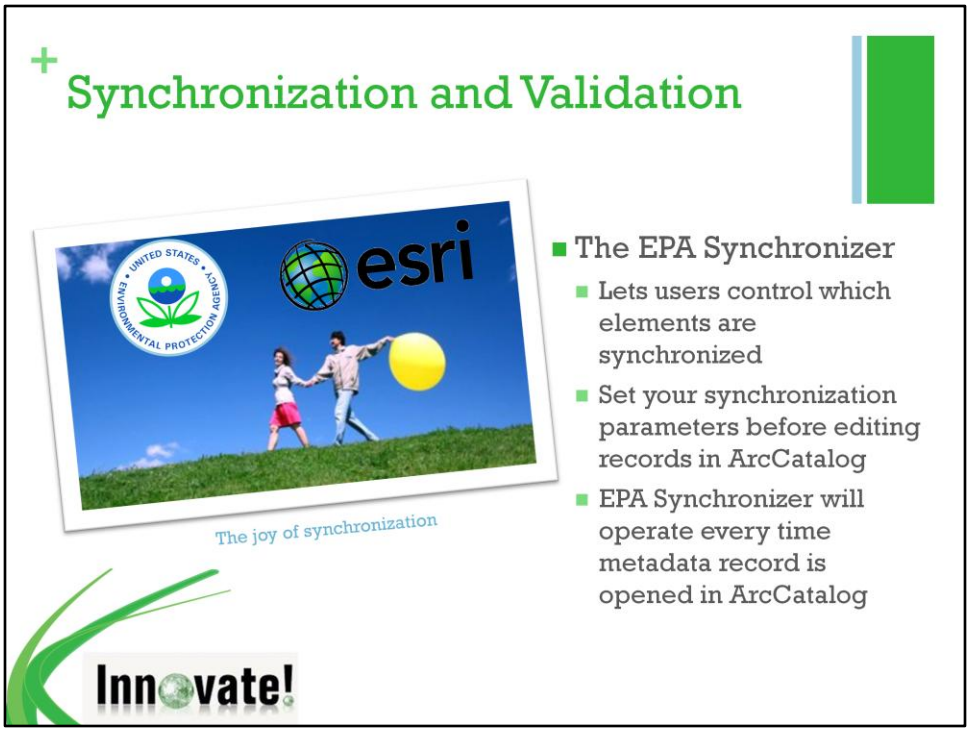
Synchronization is the process by which properties of a data set are read from the data and written into its metadata (e.g., bounding coordinates, spatial reference information, attributes, etc.). Synchronizers are considered useful because they remove the burden of documenting some portions of your metadata record by automatically inserting information into your record. They also ensure consistency with the data set, so that changes to the data are applied to the metadata.

[To use the EPA Synchronizer, take the following steps:
Set the EPA Synchronizer as the Default Synchronizer
Open the EPA Synchronizer Manager by clicking on the "EPA Synchronizer Manager" button from the Metadata Toolbar
Select the "Select Synchronizers" tab from the EPA Synchronizer Manager interface
Select the EPA Synchronizer and deselect all other available synchronizers
Select Which Attributes to Synchronize
Select the "EPA Sync Settings" tab from the EPA Synchronizer Manager interface
Choose which elements to synchronize with your data set
Click 'OK'
Apply Synchronization
Synchronization can either be **applied manually** or it may be enabled as a **background process**.
The background process applies synchronization every time the data set is viewed in the description tab.
To enable **background synchronization**, go to Customize->ArcCatalog Options and select the 'Metadata' tab
Enable the checkbox for 'Automatically update when metadata is viewed.'
Select the data set, and view the metadata record in the description tab. This will automatically apply synchronization.
To **manually synchronize** metadata, select the data set in the contents window, and click the **'Synchronize Metadata'** button in the EPA Metadata Toolbar. This will force synchronization for your data set and metadata record, using the settings you have specified in the EPA Synchronizer Manager.
Validation]



This slide lists a few of the most commonly synchronized fields.

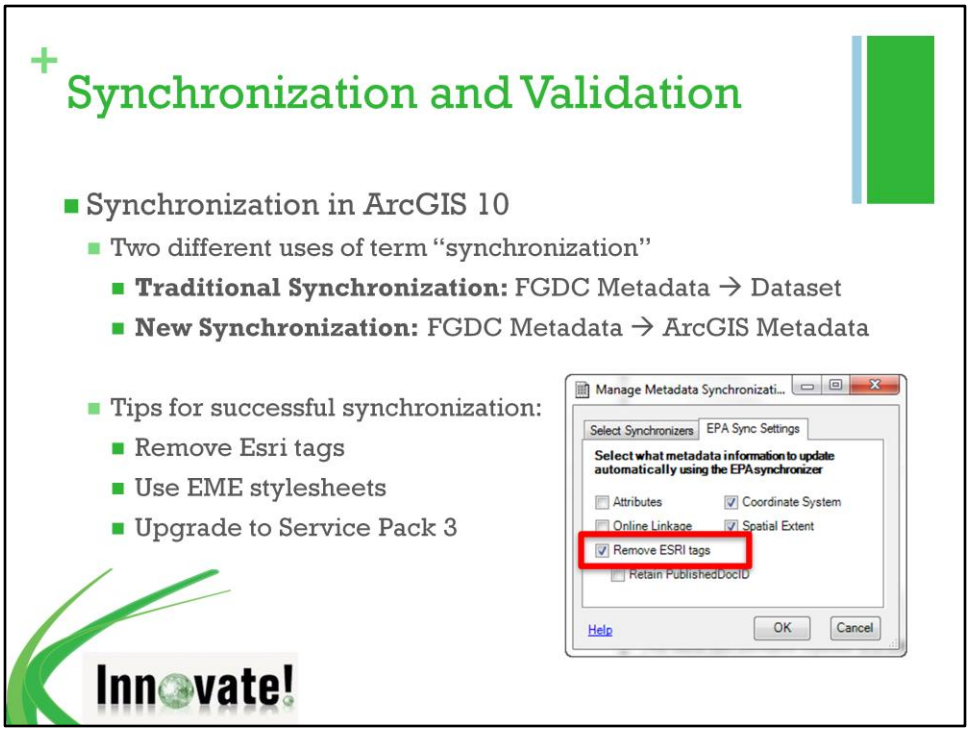
ArcCatalog uses synchronizers to insert information into your metadata. The problem with synchronizers is that they may insert information into your record that is not compliant with FGDC standards.



The EPA Synchronizer helps users find a middle ground by providing users with the capability to control which elements are synchronized with the data set. This allows users to retain information for important elements, but also avoids inserting unnecessary information into the metadata record. The EPA Synchronizer is accessed from the EPA metadata toolbar. Clicking the EPA Synchronizer button from the toolbar will open the EPA Synchronizer interface. Users can select which synchronizers to use and which elements to synchronize.

Note that the EPA Synchronizer cannot be used to modify synchronization that has already been applied to a record. The synchronization parameters should be set **before** editing records in ArcCatalog. If you have a metadata record that was already modified by ArcCatalog using the FGDC and/or ISO synchronizers and would like to remove the elements that were inserted into your record by ArcCatalog, please use the "Remove ESRI Elements" button

Also note that the EPA Synchronizer will continue to operate on your metadata record every time the information is viewed in ArcCatalog. This will override any information in your metadata record for the fields you have selected to synchronize (e.g., coordinate system information). If you would like the synchronization process to be discontinued, you will need to disable the ArcCatalog metadata synchronizers.



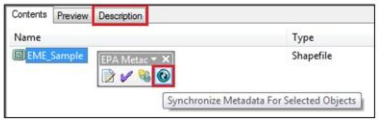
One important thing to note is that synchronization has changed in ArcGIS 10. Basically ArcGIS 10 introduced a new use of the term "synchronization," which has led to a lot of confusion. Up to this point we have been talking about Traditional Synchronization, or the process or synching FGDC metadata with a dataset. In ArcGIS 10, "synchronization" means synching FGDC metadata with ArcGIS metadata. This is an issue that we're going to address in greater detail during the next training session, but I wanted to mention it very briefly now.

I also want to give you a few quick tips for successful synchronization:
•Remove ESRI tags to avoid introducing non-compliant information by accident
•Use the EME stylesheets (this is something else we will cover in more detail next time)
•Upgrade to ArcGIS 10 Service Pack 3. This upgrade sorts out some of the ArcGIS 10 metadata glitches.

Synchronization and Validation

- How to Use the EPA Synchronizer

1.

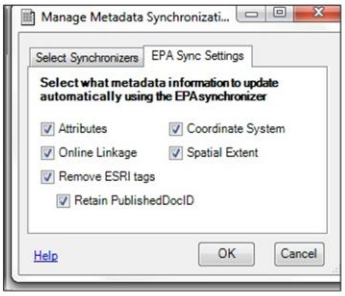


Open EME Synchronizer Manager

2.

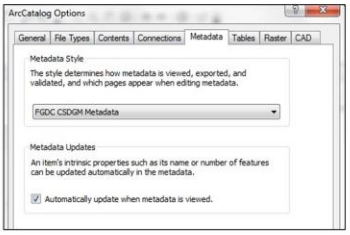
Select only "EPA Synchronizer"

3.

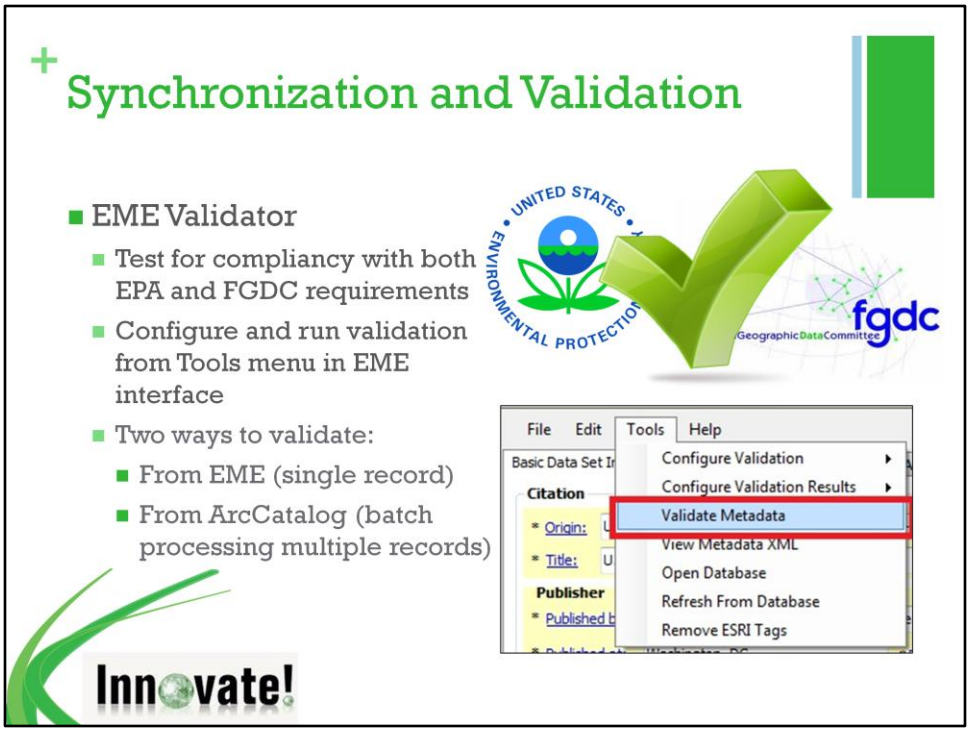


Select attributes to synchronize

4.

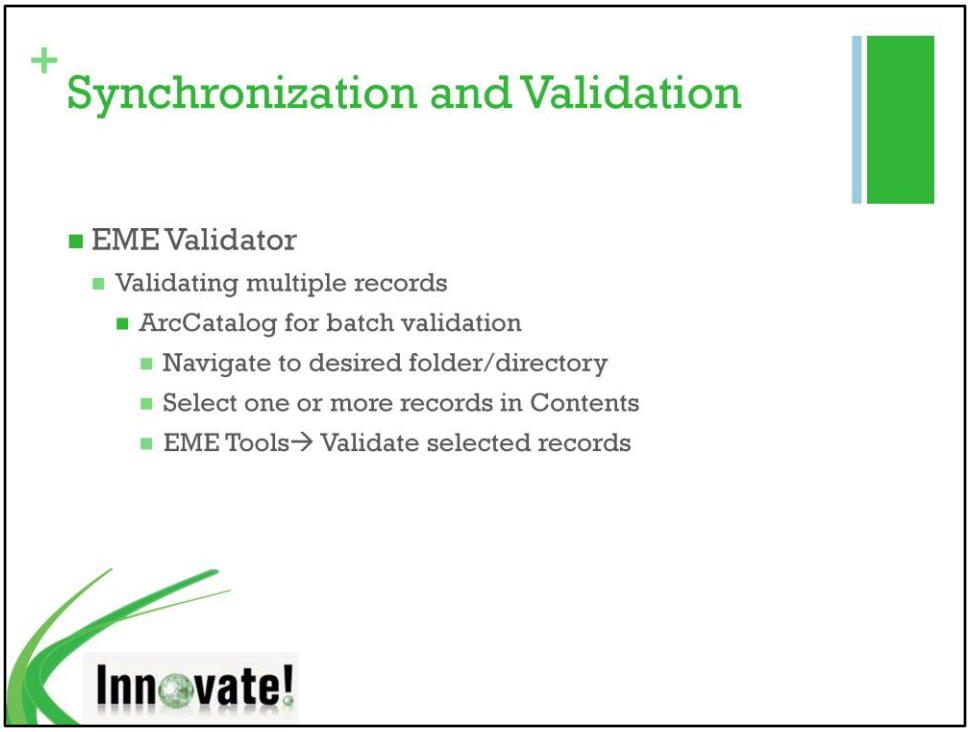


Enable background synchronization



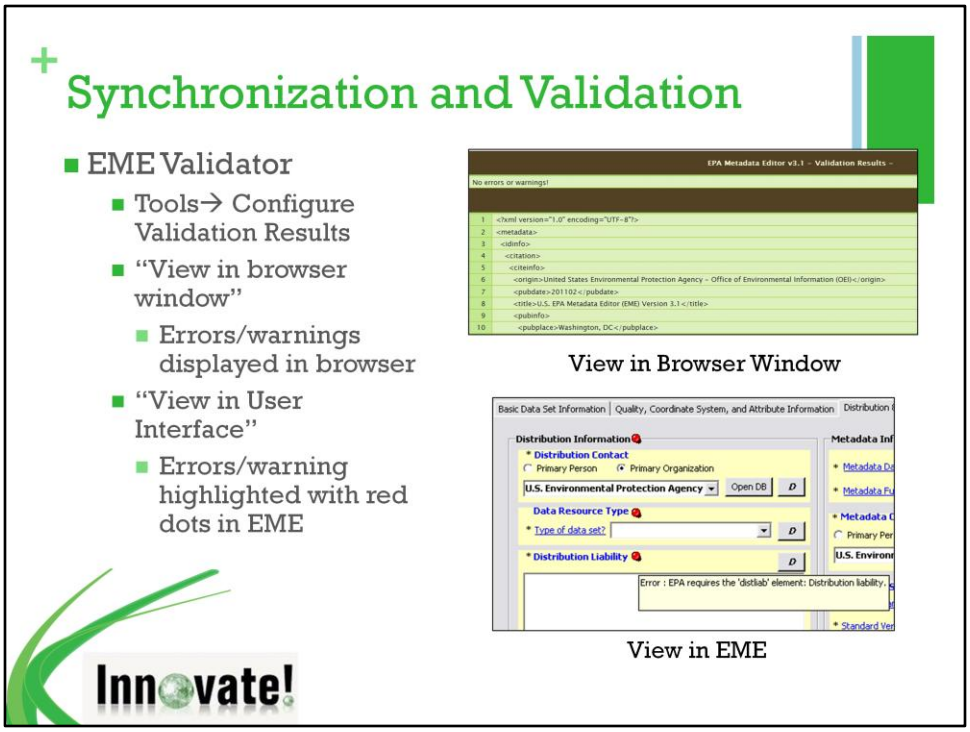
The EME allows a user to validate records according to [EPA's Geospatial Metadata Technical Specification Version 1.0]. This validation function tests metadata records for compliancy with both FGDC requirements and EPA requirements. All EPA-compliant records are also FGDC-compliant. This service can be invoked for a single metadata record from the EPA Metadata Editor user interface or it can be invoked in batch-processing mode for a set of files from ArcCatalog.

You will access the validation service through the EME Tools menu.



Validating multiple records
- ArcCatalog for batch validation
  - Navigate to desired folder/directory
  - Select one or more records in Contents
  - EME Tools→ Validate selected records

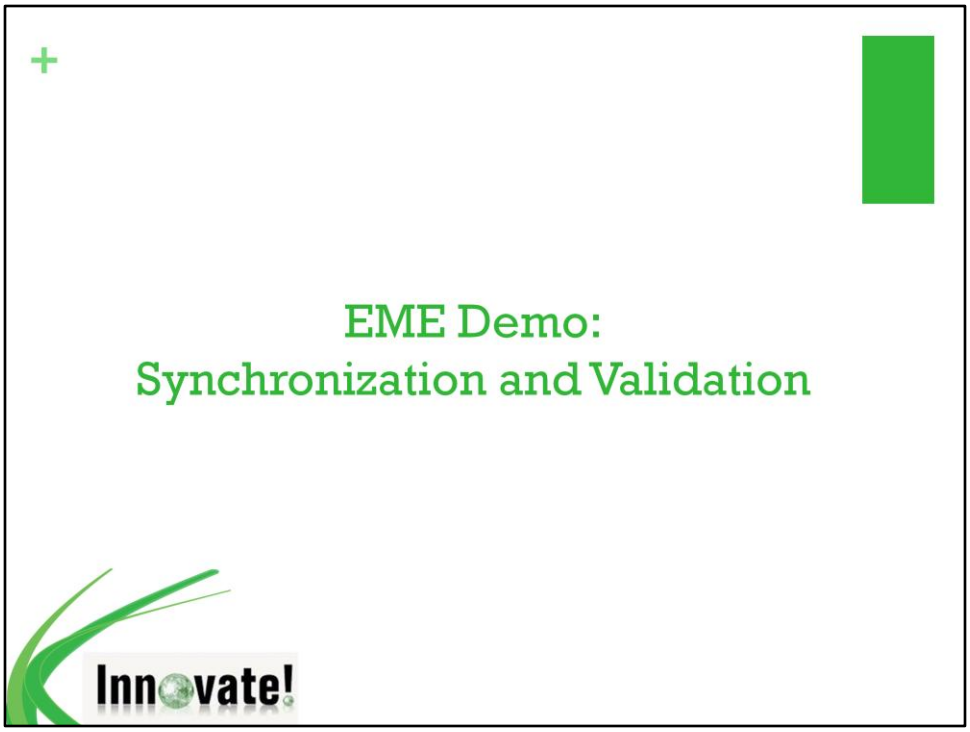
[Using the Validation Service for a Batch of Metadata Records
If you'd like to validate multiple records simultaneously, you can use the batch validation feature of the EME. This is done in ArcCatalog outside of the EME interface. To batch validate a set of records, take the following steps:
Navigate to a directory or folder of interest in ArcCatalog
Click on the 'Contents' tab.
Select one or more metadata records in the Contents interface
Click on the 'Validate selected records...' button in the Metadata Toolbar in ArcCatalog. Each metadata record selected will be displayed in a separate web page in your browser. The title of the selected record will be displayed in the title of the web page.
Troubleshooting Viewing the Validation Results in your Web Browser
If the EPA Validator results don't appear to be formatted correctly within your web browser, take the following steps:
Open Windows Explorer
In the "Tools" menu, go to "Folder Options"
Click on the "File Types" tab
Pick "XML Document" in the list then click "Edit..."
The "Content Type (MIME)" should be text/xml and "Default Extension for Content Type" should be ".xml"
Note: if XML is not in your list, click "New", then enter "xml" for the extension and "XML document" from the drop down list for the file type.]



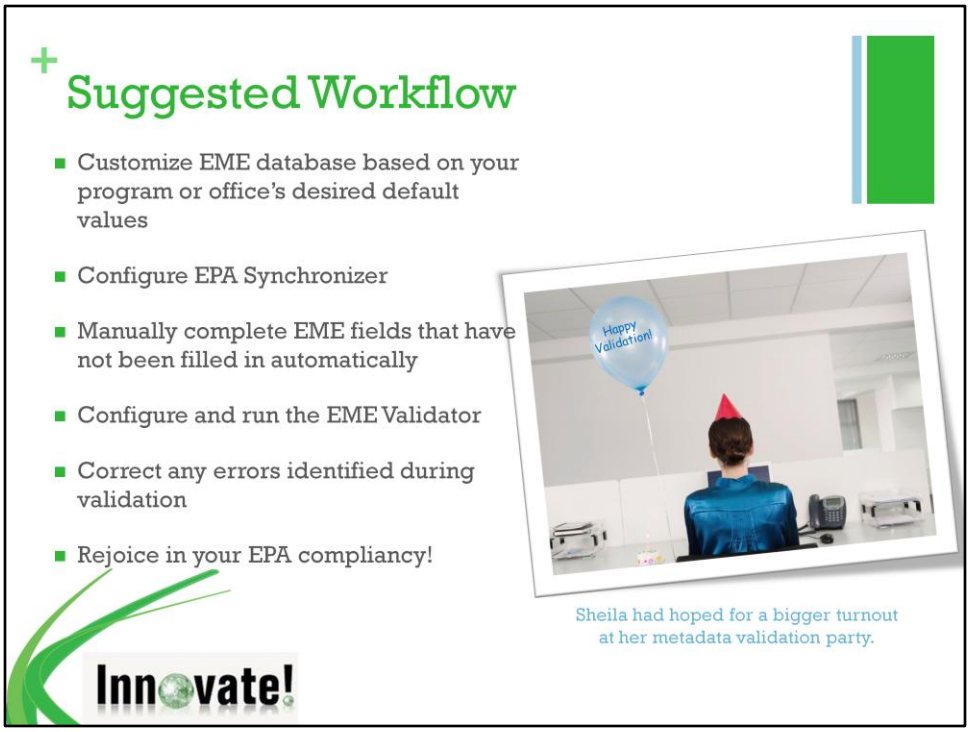
Depending on the settings you've configured for viewing the results, you will be presented with the results of validation within a web browser or the EME user interface (shown below). You may choose to view results using either or both of these options.

The 'View in browser window' option will open a web page and will list the errors and/or warnings found during validation (if any) along with information about the specific line(s) where errors and/or warnings were reported. It also displays the total number of errors and warnings found in the record. You may scroll through the record to view the element(s) that caused the error. Errors will be highlighted in red and warnings will be highlighted in yellow.

The 'View in EME' option will highlight errors in the user interface using a red balloon. Red balloons are displayed at each location within the EME user interface where errors were found in the metadata record. Users can hover over the balloon to understand what the nature of the error was and then fix the error(s) accordingly (see below).

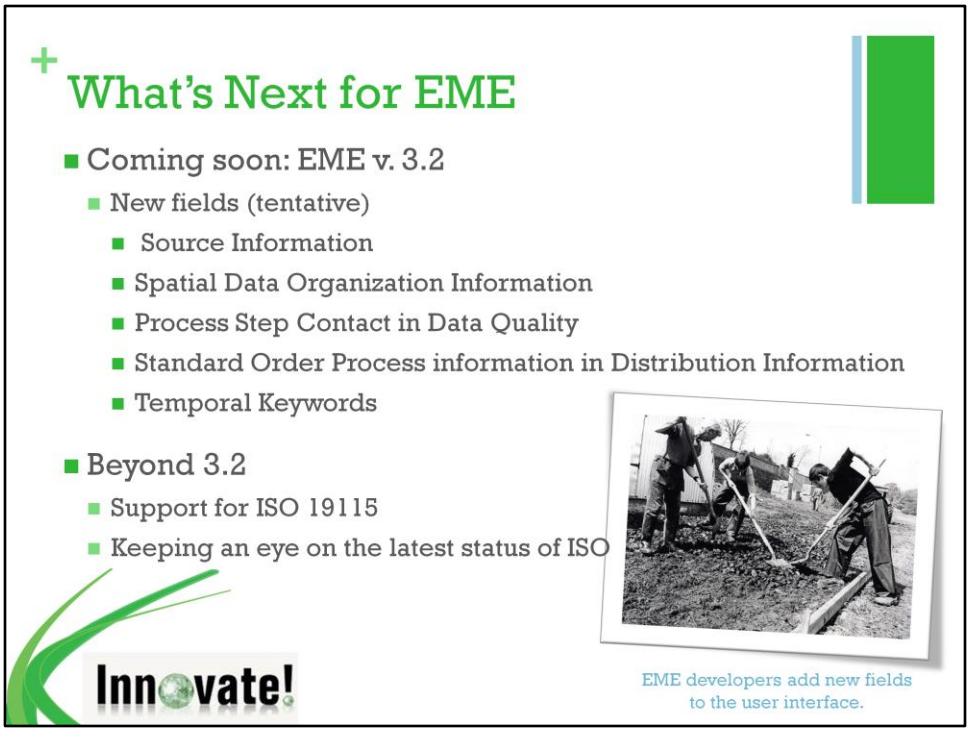


Now Catherine is going to give you a demonstration of synchronization and validation, working through the steps that we just discussed. Catherine, take it away…

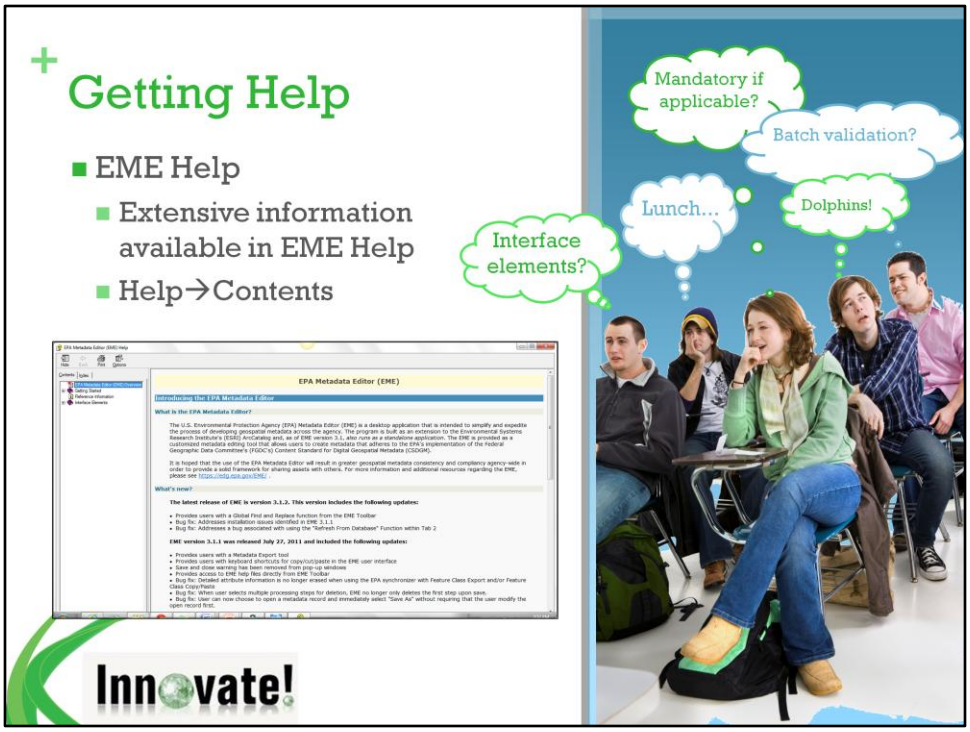


Thanks, Catherine.

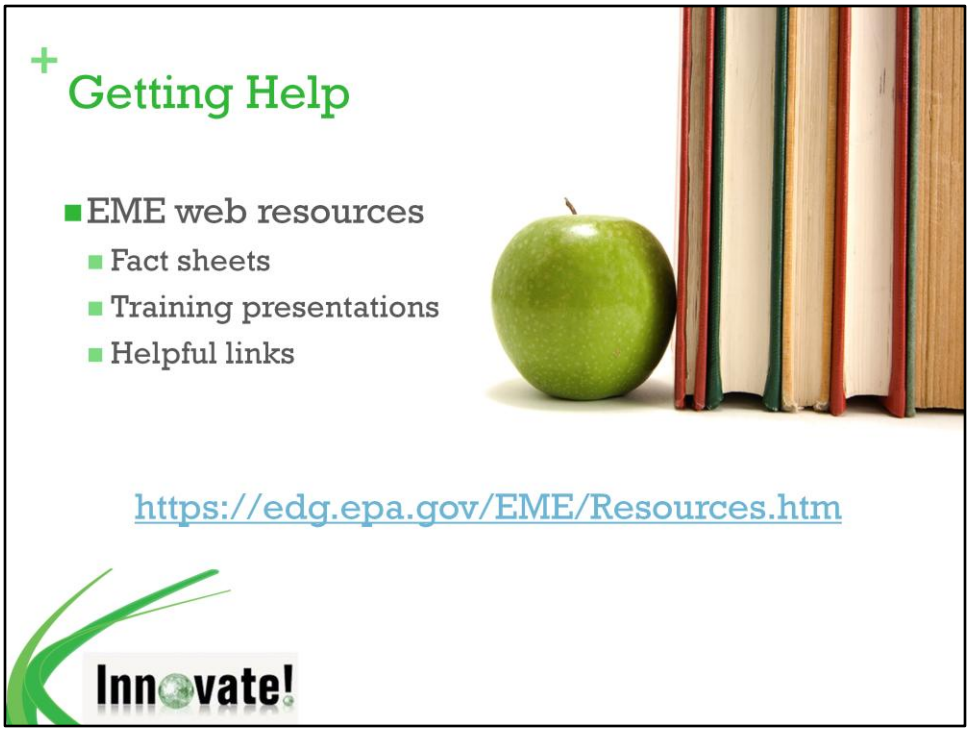
We've covered a lot today, so I want to give you a quick overview of our suggested workflow. First you will customize the EME database based on your individual needs. Next you will configure the EPA synchronizer to make sure that no non-compliant fields are introduced into your records. Third you will manually complete any EME fields that were not filled in automatically using the default values you set up. Fourth, you'll configure and run the EME Validator. Finally, you will correct any errors found during validation. Then, and only then, you can rejoice.



This year we will be releasing a new version of the EME. It will include some additional fields, which at this point are still tentative. In upcoming versions, the EME will also include support for ISO 19115, which is going to be the successor to FGDC CSDGM. We are keeping an eye on the latest status of ISO. This is something we will talk about in upcoming training sessions.



I mentioned EME help at the beginning of the presentation, but it's worth repeating that a lot of information is available to you in the Help documentation. We've sped through a lot of content today. All of what we've talked about is included in the Help documentation, which you can access from the EME interface.



There are also some useful resources available on the EME website, including fact sheets, training presentations, and links to other metadata resources. Today's presentation will also be posted at this address.

We do have a few more training sessions coming up this summer. Please watch your inboxes for reminders about dates and times.

If you'd like to get in touch, feel free to contact me, Catherine, or Jessica. We always appreciate questions and feedback from EME users.

At this point I'd like to open it up for questions and discussions. Dave, do we have any questions in the chat pod?